EPoX

KP6-LA

A Pentium® II Processor based AGP mainboard

TRADEMARK

All products and company names are trademarks or registered trademarks of their respective holders.

These specifications are subject to change without notice.

Technical Support Services

If you need additional information, help during installation or normal use of this product, please contact your retailer. If your retailer can not help, you may E-Mail us with any questions at the following address tech@epox.com.

Record your serial number before installing your KP6-LA mainboard (the serial number is located near the ISA slots at the edge of the board)

EPoX KP6-LA serial number:

_____

BIOS Upgrades

Please use either our Web Site or BBS for current BIOS Upgrades.

Internet Access

http://www.epox.com
sales@epox.com
tech@epox.com

Modem Access

886-2-218-0997 (Taiwan)
31-182-618451 (The Netherlands)

You can access this number via a Hayes-compatible modem with a 2,400 to 28,800 baud rate. The following setup format is required:

8 Data Bits, No Parity, 1 Stop Bit.

If your modem is unable to connect at higher baud rates, try connecting at 2,400 baud before contacting Technical Support.

Thank you for using EPoX mainboards!

EPoX

User Notice

No part of this product, including the product and software may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the express written permission of EPoX Computer Company (hereinafter referred to as EPoX) except documentation kept by the purchaser for backup purposes.

EPoX provides this manual "as is" without warranty of any kind, either express or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose. In no event shall EPoX be liable for any loss or profits, loss of business, loss of use or data, interruption of business or for indirect, special incidental, or consequential damages of any kind, even if EPoX has been advised of the possibility of such damages arising from any defect or error in the manual or product. EPoX may review this manual from time to time without notice. For updated BIOS, drivers, or product release information you may visit EPoX's home page at: http://www.epox.com

Products mentioned in this manual are mentioned for identification purposes only. Product names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies.

The product name and revision number are both printed on the mainboard itself.

Handling Procedures

Static electricity can severely damage your equipment. Handle the KP6-LA and any other device in your system with care and avoid unnecessary contact with system components on the mainboard.

Always work on an antistatic surface to avoid possible damage to the motherboard from static discharge.

We assume no responsibility for any damage to the KP6-LA mainboard that results from failure to follow installation instructions or failure to observe safety precautions.
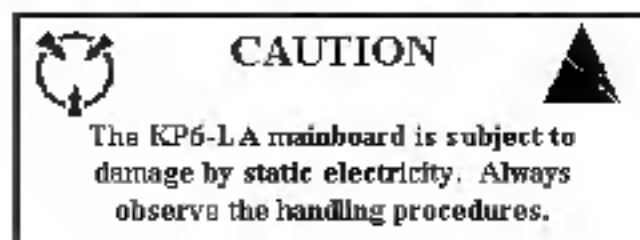
CAUTION

The KP6-LA mainboard is subject to damage by static electricity. Always observe the handling procedures.

EP6X

Table of Contents

Section 1
INTRODUCTION

Components Checklist

✓   A.   (1)   KP6-LA mainboard

✓   B.   (1)   KP6-LA user's manual

✓   C.   (1)   Floppy ribbon cable

✓   D.   (2)   Hard drive ribbon cables

✓   E.   (1)   Retention Module

✓   F.   (1)   Heatsink Support Unit

✓   G.   (1)   PS/2 to AT keyboard connector adapter (option)

✓   H.   (1)   Bus master drivers

           (1)   DMI (option)

Back to Top
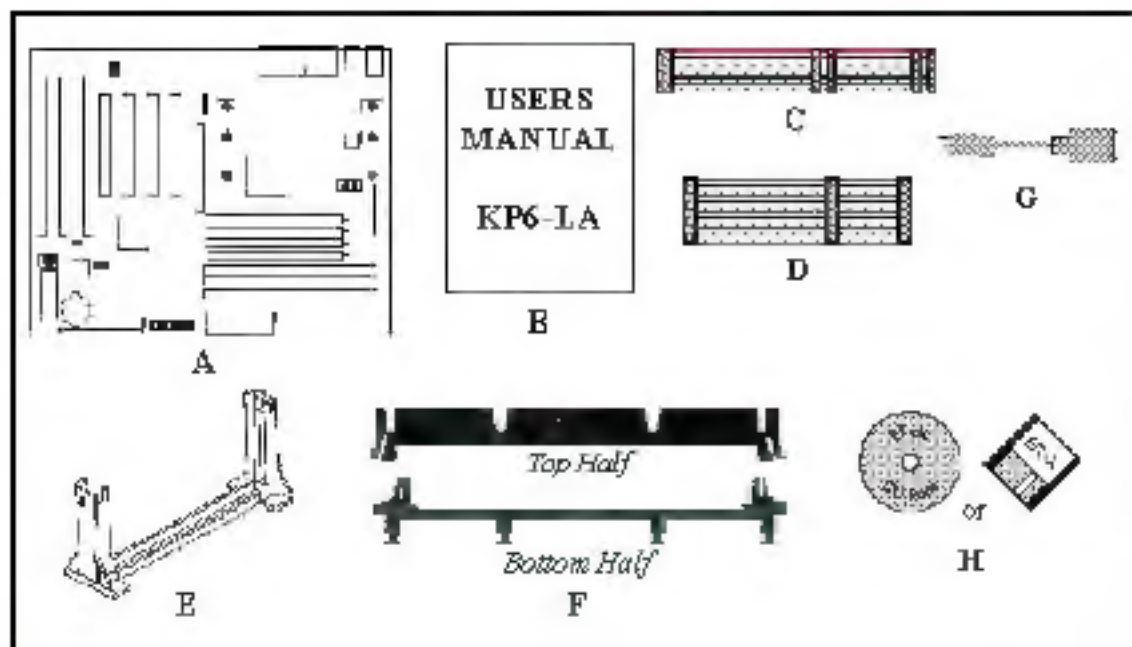
Overview

Pentium II

The Pentium® II Processor is the follow-on to the Pentium® Processor. The Pentium® II Processor, like the Pentium® Pro processor, implements a Dynamic Execution micro-architecture -- a unique combination of multiple branch prediction, data flow analysis, and speculative execution. This enables the Pentium® II Processor to deliver higher performance than the Pentium® processor, while maintaining binary compatibility with all previous Intel architecture processors.

A significant feature of the Pentium® II Processor, from a system perspective, is the built-in direct multiprocessing support. In order to achieve multiprocessing, and maintain the memory and I/O bandwidth to support it, new system designs are needed. For systems with dual processors, it is important to consider the additional power burdens and signal integrity issues of supporting multiple loads on a high speed bus. The Pentium® II Processor card supports both uni-processor and dual processor implementations.

The Pentium® II Processor utilizes Single Edge Contact (S.E.C.) (Figure 1) cartridge packaging technology. The S.E.C. cartridge allows the L2 cache to remain tightly coupled to the processor, while maintaining flexibility when implementing high performance processors into OEM systems. The second level cache is performance optimized and tested at the cartridge level. The S.E.C. cartridge utilizes surface mounted core components and a printed circuit board with an edge finger connection. The S.E.C. cartridge package introduced on the Pentium® II Processor will also be used in future Slot 1 processors.

The S.E.C. cartridge has the following features; a thermal plate, a cover and a PCB with an edge finger connection. The thermal plate allows standardized heatsink attachment or customized thermal solutions. The thermal plate enables a reusable heatsink to minimize fit issues for serviceability, upgradeability and replacement. The full enclosure also protects the surface mount components. The edge finger connection maintains socketability for system configuration. The edge finger connector is denoted as 'Slot 1 connector' in this and other documentation.

The entire enclosed product is called the Pentium® II Processor. The packaging technology and each of the physical elements of the product are referred to using accurate technical descriptions. This allows clear reference to the products as just a

processor. This is the model used in past packaging technologies like PGA, TCP, PQFP, DIP, etc.

S.E.C. Cartridge Terminology

- Pentium® II Processor
  The new enclosed card packaging technology is called a "Single Edge Contact cartridge." This is similar to previous names for packaging technology such as PGA or TCP.
- Processor card
  The green PCB (with or without components on it)
- Processor core
  The silicon on the PLGA package on the PCB
- Cover
  The plastic cover on the opposite side from the thermal plate.
- Slot 1
  The slot that the S.E.C. cartridge plugs into, just as the Pentium® Pro processor uses Socket 8.
- Retention mechanism
  Formerly 'retention module' the dual posts, etc. that holds the cartridge in place.
- Thermal plate
  The heatsink attachment plate
- Heat sink supports
  The support pieces that are mounted on the mainboard to provide added support for heatsinks.

The L2 cache (TagRAM, PBSRAM) components keep standard industry names.

The Pentium® II Processor is the first product to utilize the S.E.C. cartridge technology and Slot 1 connector. Unless otherwise noted, any references to "Pentium® II Processor," "Pentium® II Processor/Slot 1 processor" or Processor" will apply to both the Pentium® II Processor desktop processors.
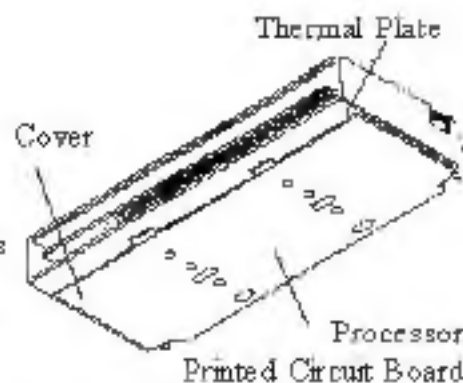

Figure 1: Pentium® II Processor CPU with S.E.C. Cartridge

Back to Top

Accelerated Graphics Port
(AGP or A.G.P.)

Typically, 3D graphics rendering requires a tremendous amount of memory, and demands ever increasing throughput speed as well. As 3D products for the personal computer become more and more popular, these demands will only increase. This will cause a rise in costs for both end-users and manufacturers. Lowering these costs as well as improving performance is the primary motivation behind AGP. By providing a massive increase in the bandwidth available between the video card and the processor, it will assist in relieving some of these pressures for quite sometime.

Hardware Monitoring

Hardware monitoring allows you to monitor various aspects of your systems operations and status. These include features such as CPU temperature, voltage and fan RPM's.

Desktop Management Interface
(DMI)

DMI, or Desktop Management Interface, is a BIOS level method for monitoring specific BIOS related hardware features. It allows the BIOS to collect and store information specific to the system, so that vendors and system integrators will have greater access to information regarding system configuration and design. This allows for better troubleshooting, migration planning, and upgradeability decision making.

KP6-LA Form-Factor

The EPoX KP6-LA is designed with ATX form factor - the latest industry standard of chassis. The ATX form factor is essentially a Baby-AT baseboard rotated 90 degrees within the chassis enclosure and a new mounting configuration for the power supply. With these changes the processor is relocated away from the expansion slots, allowing them all to hold full length add-in cards. ATX defines a double height aperture to the rear of the chassis which can be used to host a wide range of onboard I/O. Only the size and position of this aperture is defined, allowing PC manufacturers to add new I/O features (e.g.: TV input, TV output, joystick, modem, LAN, audio, etc.) to systems. This will help systems integrators differentiate their products in the marketplace, and better meet your needs.

* By integrating more I/O down onto the board and better positioning the hard drive and floppy connectors material cost of cables and add-in cards is reduced.

* By reducing the number of cables and components in the system, manufacturing time and inventory holding costs are reduced and reliability will increase.

* By using an optimized power supply, it's possible to reduce cooling costs and lower acoustical noise. An ATX power supply, which has a side-mounted fan, allows direct cooling of the processor and add-in cards making a secondary fan or active heatsink unnecessary in most system applications.
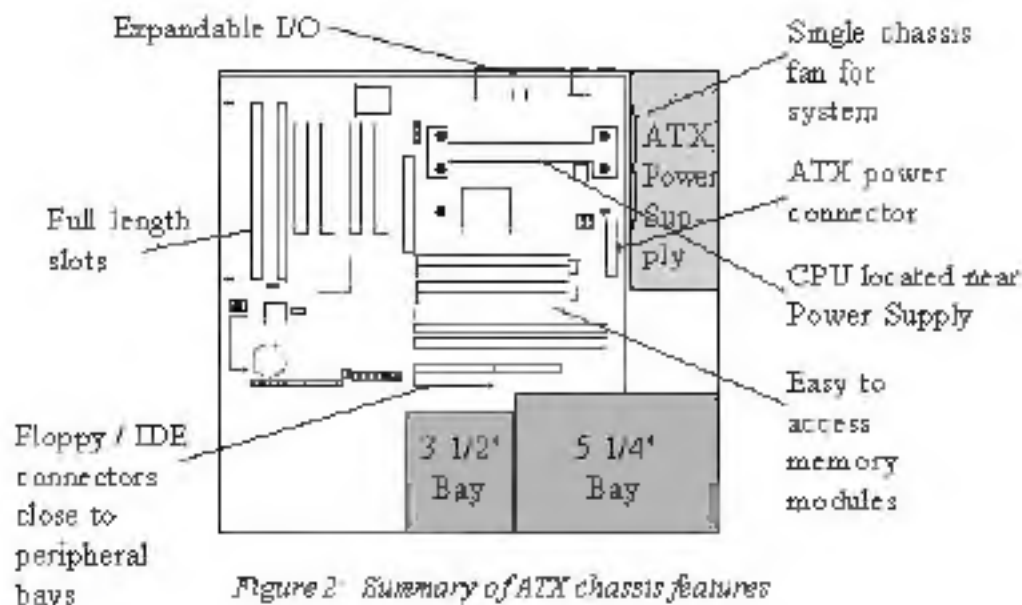
Figure 2: Summary of ATX chassis features

Back to Top

I/O Shield Connector

The KP6-LA is equipped with an I/O back panel. Please use the appropriate I/O shield (figure 3)

Figure 3
KP6-LA
I/O back
panel layout
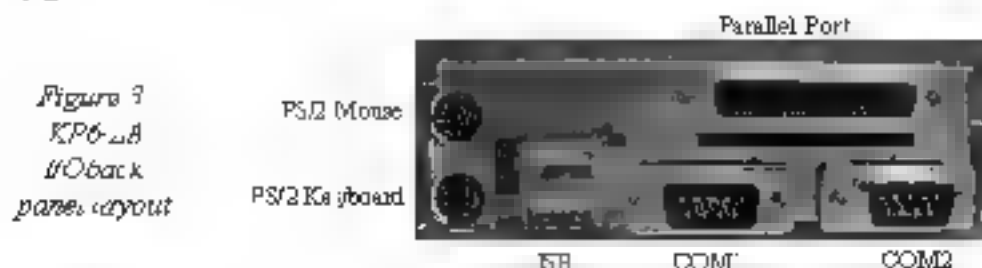
Power-On/Off (Remote)

The KP6-LA has a single 20-pin connector for ATX power supplies. For ATX power supplies that support the **Remote On/Off** feature, this should be connected to the systems front panel for system Power On/Off button. The systems power On/Off button should be a momentary button that is normally open.

The KP6-LA has been designed with "Soft Off" functions. You can turn Off the system from one of two sources. The first is the front panel Power On/Off button, and the other is the "Soft Off" function (coming from the KP6-LA's onboard circuit controller) that can be controlled by the operating system. Windows 95 will control this when the user clicks that they are ready to Shutdown the system.

KP6-LA Board

Case (chassis) Power
ON/OFF button (TP7)

Figure 4 Simple ATX Power
ON/OFF Controller

Back to Top

System Block Diagram
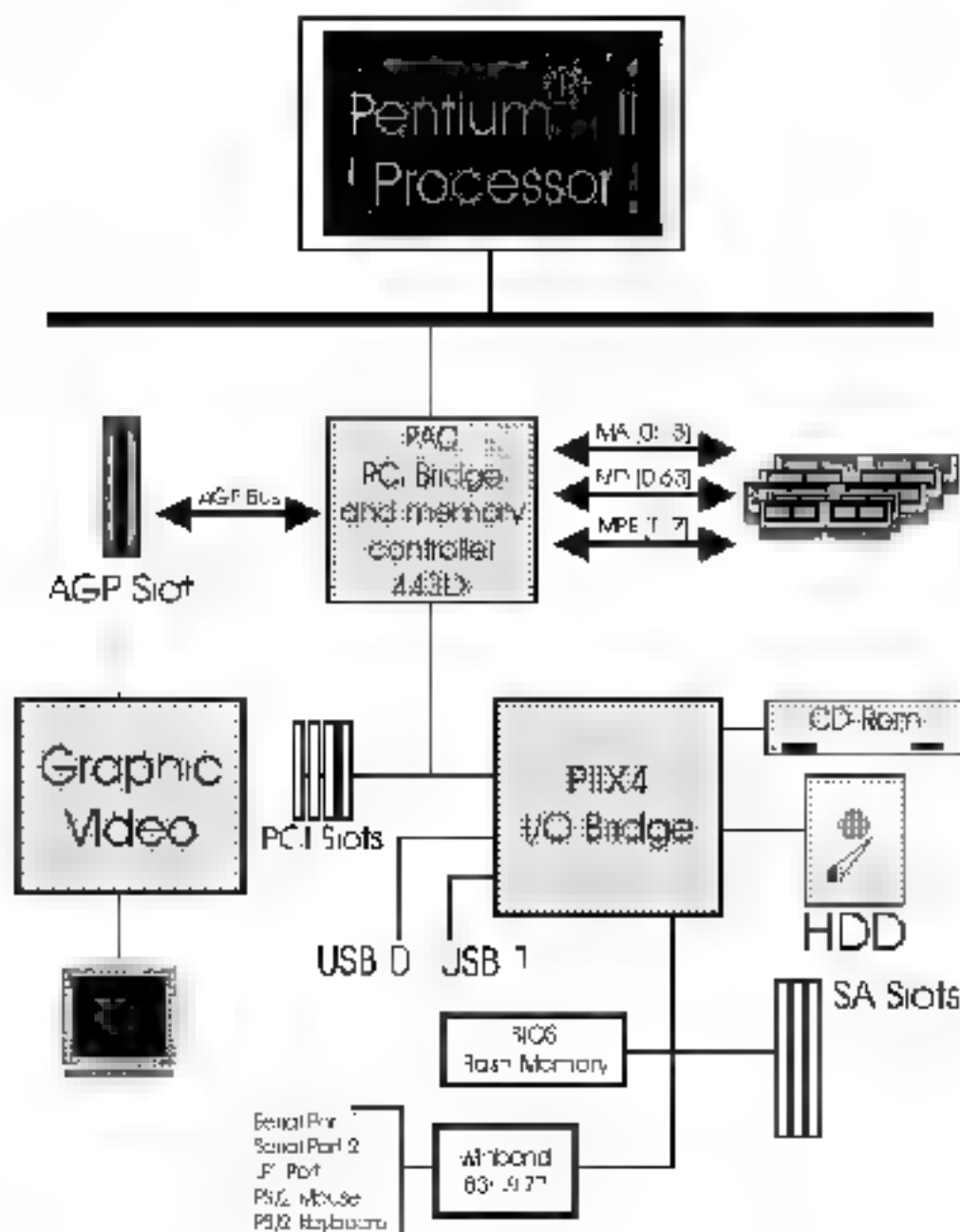
Figure 5. System Block Diagram

Back to Top

Section 2
FEATURES

KP6-LA Features:

- KP6-LA is based on the Pentium® II Processor operating at 233 ~ 330 MHz on Slot 1. The board is configured by an Easy Setting Single Jumper (E.S.S.J.) to match your CPU clock speed

- Designed with Intel's 82443 LX AGPset

- Supports up to 1 Gigabyte of DRAM (minimum of 8 MB on board, You can use either 72-pin SIMM x 4 or 168-pin DIMM x 3 or both. 1 Bank is shared between the SIMM & DI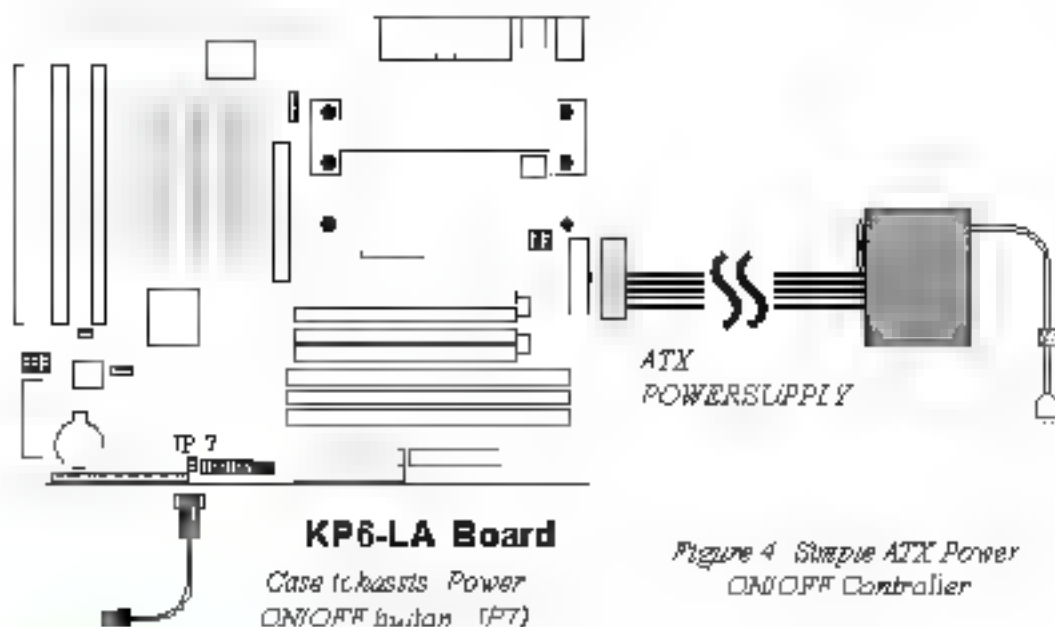MM) It will automatically detect Extended Data Output (EDO) DRAM or Synchronous DRAM memory (SDRAM) (please see Section 3.2)

- KP6-LA will support Error Checking and Correcting (ECC) when using parity DRAM memory modules. This will detect multiple bit errors and correct 1-bit memory errors

- Supports 3 16-bit ISA slots, 4 32-bit PCI slots, 1 AGP slot and provides 2 independent high performance PCI IDE interfaces capable of supporting PIO Mode 3,4 and Ultra DMA 33 devices. The KP6-LA supports 4 PCI Bus Master slots and a jumperless PCI INT# control scheme which reduces configuration confusion when plugging in PCI cards

- Supports ATAPI (e.g. CD-ROM) devices on both Primary and Secondary IDE interfaces

- Designed with Winbond W83977 Multi-I/O: 1 floppy port, 1 parallel port (EPP/ECP), and (2 serial ports 16550 Fast UART)
  Note: Japanese "Floppy 3 mode" is also supported

- Includes a PS/2 mouse connector

- Allows use of a PS/2 or AT keyboard

- Features Award Plug & Play BIOS. With Flash Memory you can always upgrade to the current BIOS as they are released (http://www.epox.com please visit our Technical Support section for the latest updates)

Back to Top

- KP6-LA utilizes a Lithium battery which provides environmental protection and longer battery life

- Supports the Universal Serial Bus (USB) connector. The onboard PIIX4 chip provides the means for connecting PC peripherals such as: keyboards, joysticks, telephones, and modems

- Built-in ATX 20-pin power supply connector

- Software power down when using Windows® 95

- Supports ring-in feature (remote power on through external modem, allows system to be turned on remotely)

- Resume by Alarm (Allows your system to turn on at a preselected time)

- Power Loss Recovery (In the event of a power outage your system will automatically turn itself back on without user intervention)

- Supports CPU Hardware sleep and SMM (System Management Mode)

- Supports Desktop Management Interface (DMI) facilitating the management of desktop computers' hardware and software components and peripherals, whether they are stand-alone systems or linked into networks (option)

Back to TOC

Section 3
INSTALLATION
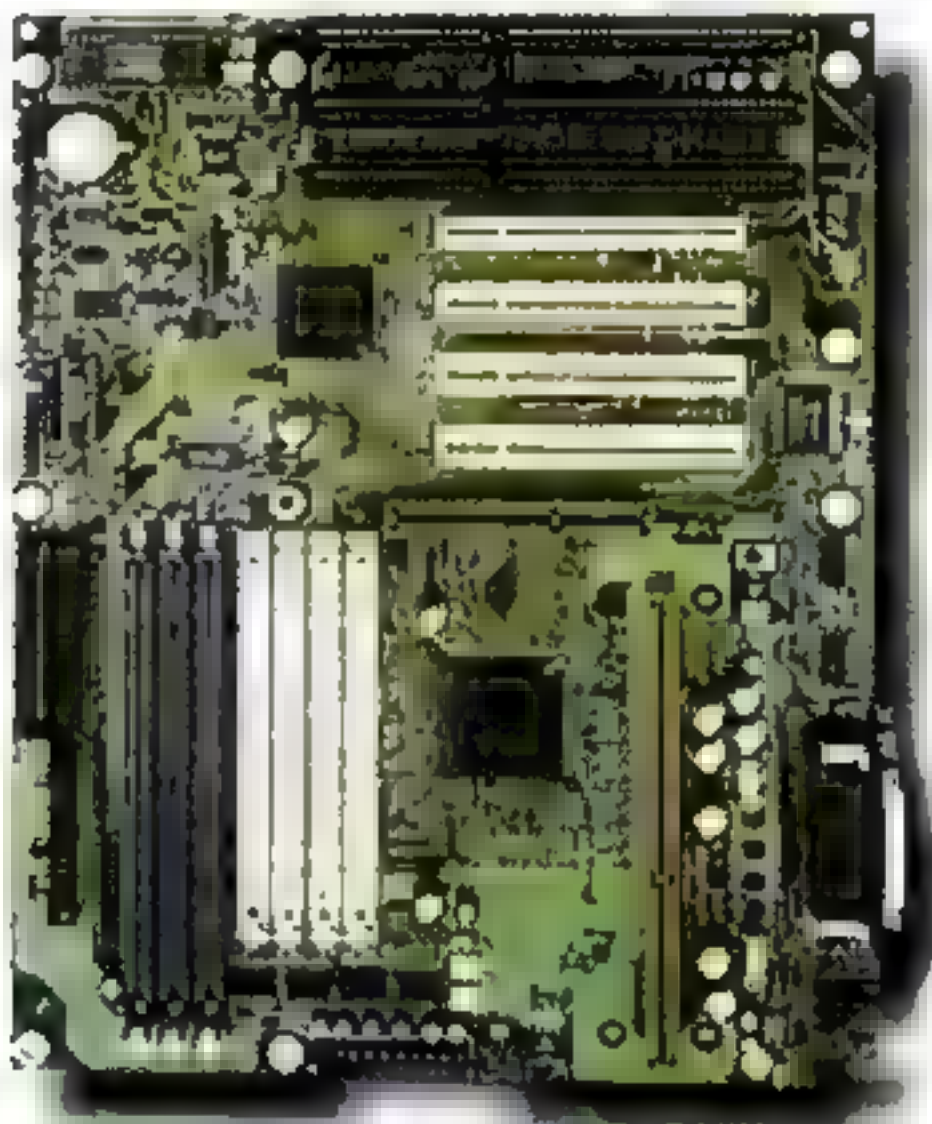
KP6-LA Detailed Layout

Figure 1

Back to Top
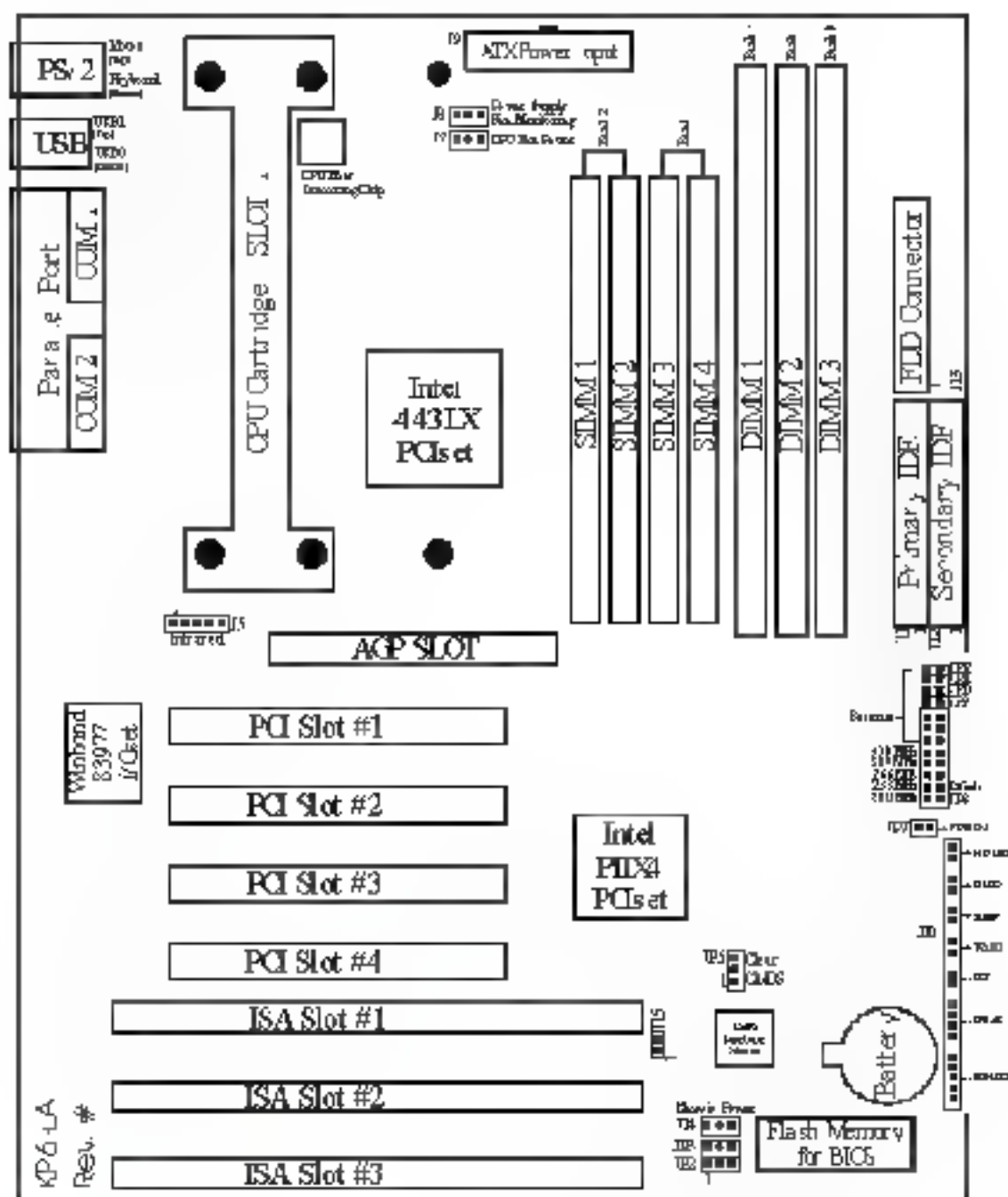
Easy Installation Procedure

Easy Installation Procedure

The following must be completed before powering on your new system

   3-1. Configure Jumpers to match your hardware
   3-2. Install memory chips
   3-3   Install Pentium II Processor
   3-4. Device Connectors

Section 3-1
Configure Jumpers

EPoX designs all motherboards with the fewest jumpers to make your install fast and easy

The following will describe all of the jumpers that you are required to set before moving on to step 3-2

   Note   The jumpers as depicted as shown (Figure 1) in their correct physical orientation.

JP2
JP3

BIOS Voltage Setting
JP2, JP3:   =   1-2   +5V Flash (Default)
            =   2-3   +12V Flash

JP5

CMOS Clear
JP5;   =   1-2   Run Mode (Default)
                2-3   Clear CMOS

Back to Top

CPU Processor Selection

JP8   =1-2   200MHz

             =3-4   233MHz (Default)

             =5-6   266MHz

              7-8   300MHz

             =9-10   330MHz

             =11-12 Reserved

              13-14 Reserved

             =15-16 Disable E S S J

Reserved CPU Processor Selections

JP9   =Reserved

JP10   Reserved

JP11   =Reserved

JP12   =Reserved

Back to Top

Section 3-2
System Memory Configuration

Memory Layout

The KP6-LA supports 3, 168-pin DIMMs (Dual In-line Memory Module) and 4, 72-pin SIMMs (Single In-one Memory Module). The DIMMs can be either EDO (Enhanced Data Out) or SDRAM (Synchronized DRAM). The 72-pin SIMMs must be installed in pairs, and DIMMs may be installed using just one chip.

- **We only recommend using SDRAM and not mixing SIMM with DIMM modules**
- Same size and type EDO memory must be installed in pairs so that memory modules are not mixed in each bank.
- DIMM SDRAM may be 83MHz (12ns), 100MHz (10ns), or 120MHz (8ns) bus speed
- If you use both 50ns and 60ns memory you must configure your BIOS to read 60ns.
- When using Synchronous DRAM we recommend using the 4 clock variety over the 2 clock.
- **Fast Page Mode DRAM (FPM) is not supported by the LX AGPset. Only EDO and SDRAM are supported.**

Figure 2 and Table 1 show several possible memory configurations using both SIMM and DIMM.
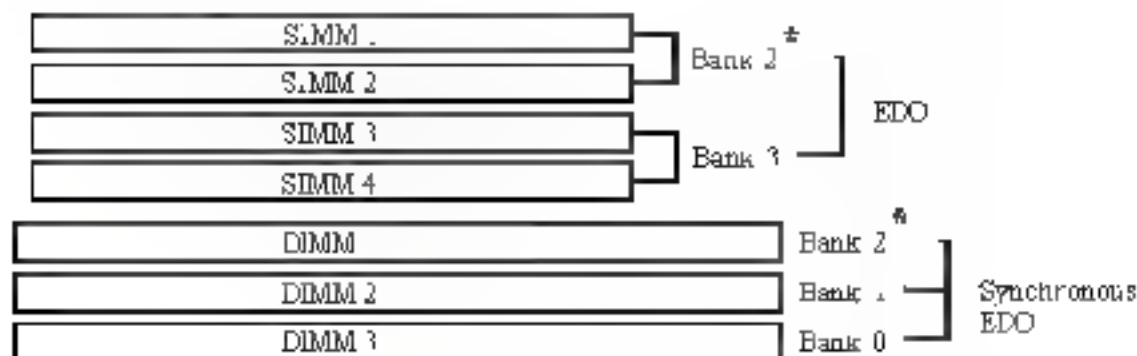
Figure 2

⚠ ***** Caution: DIMM BANK 2 & SIMM BANK 2 ARE SHARED
This means that if you use SIMM 1&2 you can not use DIMM 1 or if you use DIMM 1 you can not use SIMM 1&2.

Total Memory	DIMM 3 (Bank 0)	DIMM 2 (Bank 1)	DIMM 1 (Bank 2) Shared	SIMM 3-4 (Bank 3)	SIMM 1-2 (Bank 2) Shared
= 1GB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X 1	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X 1	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X 1	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	None
= 1GB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X 1	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X 1	None	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2
= 768MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	None	None
= 768MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	None	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	None
= 768MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	None	None	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2
= 512MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	None	None	None
= 512MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	None	None	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	None
= 512MB Maximum	None	None	None	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2
= 256MB Maximum	None	None	None	EDO 4MB, 8MB, 16MB, 32MB, 64MB, 128MB X 2	None
= 256MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB, 256M X	None	None	None	None

* SDRAM only supports 8, 16, 32, 64, 128MB DIMM modules

Table 1

DIMM Module Installation

The SIMM memory modules only fit into the sockets one way. There is a notch at one end of the memory that must fit into the SIMM socket.

Memory needs to be placed firmly into the SIMM socket at a 45 degree angle. Then move it to the 90 degree position and make sure that all contacts are aligned. It will then click into place (figure 3)

Back to Top
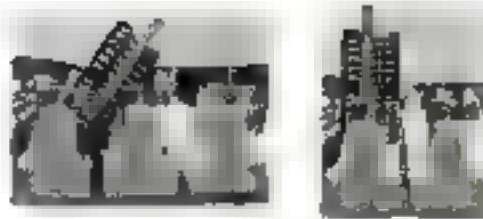
Figure 3

To remove the SIMM module release the clips on both sides of the SIMM socket (figure 4

SIMM Release Clip

Figure 4

DIMM Module Installation

Figure 5 displays the notch marks and what they should look like on your DIMM memory module

DIMMs have 168 pins and two notches that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90 degree angle and pressing straight down (figure 6 until it fits tightly into the DIMM socket (figure 7)

LEFT KEY ZONE
(UNBUFFERED)

CENTER KEY ZONE
(3.3 V DRAM

Figure 5

Figure 6

DIMM Module clip before installation
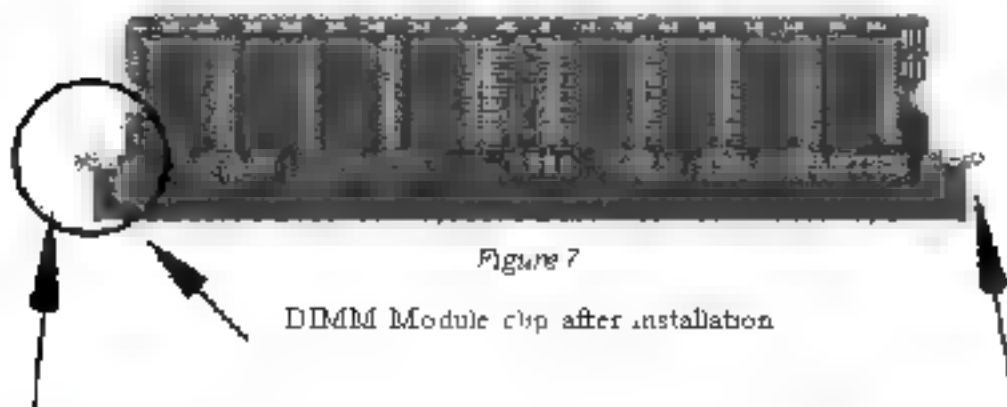
Figure 7

DIMM Module clip after installation

To remove the DIMM module simply press down both of the white clips on either side and the module will be released from the socket

Back to Top

Section 3-3
Installing a Pentium II Processor

The KP6-LA uses the Single Edge Contact (SEC) slot for a Pentium II processor packaged in an SEC cartridge. The SEC slot is not compatible with other non-Pentium II processors.

Please have ready the following list of components so that we may install the processor onto the motherboard.

1.   Pentium II retention mechanism with mounts
2.   Heat sink support (top/bottom piece)
3.   Pentium II processor heat sink
4.   Intel Pentium II Processor

OK, now that you have all of your components ready, we can start.

The attach mount bridges (four screws mounted on the motherboard) are pre-installed for easy setup. Place the Pentium II Retention Mechanism over the attach mount bridges. Make sure to line up the notch on the Retention Module (figure 8) with the tab on the Slot 1 Socket

Figure 8

After placing the retention mechanism over the Slot 1 Socket, use a #2 Phillips head screw driver to tighten the 4 screws. **DUE NOT OVERTIGHTEN THE SCREWS!**

Now we are going to install the heatsink support base piece (figure 9) onto the motherboard. There is both a large and small hole (figure 10) so that the base will only fit in one direction. This piece needs to be pushed onto the holes firmly until it is seated

Figure 9

Figure 9 shows the layout of Slot and the holes for mounting the Heatsink base piece (figure 8)
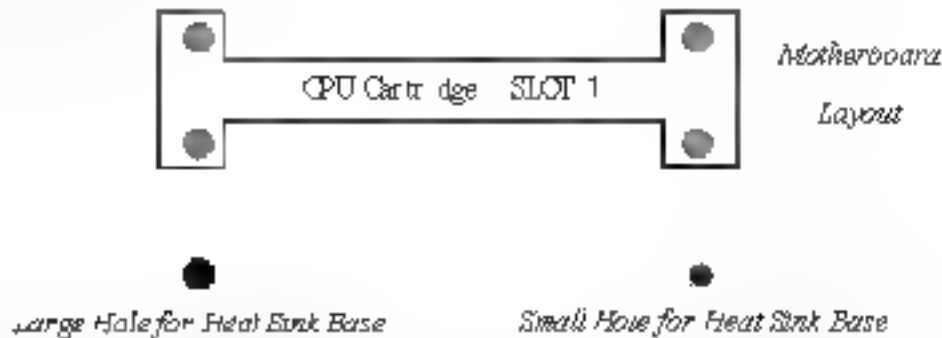
Figure 10

Now we are ready to install the SEC Cartridge (Pentium II Processor) into the Retention Module. The SEC Cartridge is mounted by sliding the SEC Cartridge into the Retention Module and letting it slide all the way down. Once it reaches the bottom make sure you press firmly on SEC cartridge to firmly secure into the Slot Socket.

Now we need to secure the heatsink with the top half of the support (figure 11). Take the top piece of the support and slide it into the bottom fin (figure) on the heatsink and then push forward until it clips into the bottom base (figure 9) that is already there (figure 1)

Top half of the support
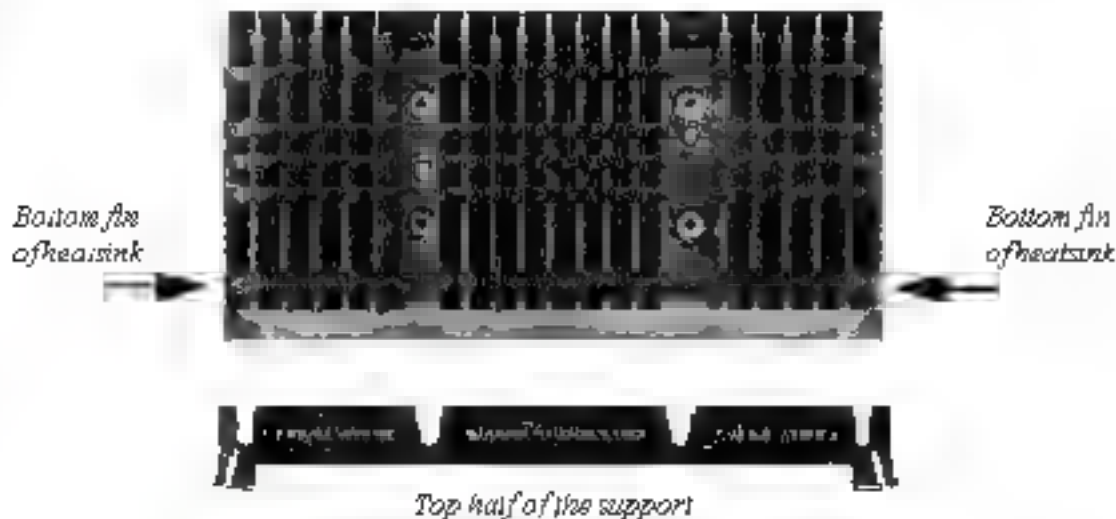
Figure 11

Section 3-4
Device Connectors

Please install the motherboard into the chassis

Now that your motherboard is installed you are ready to connect all your connections (Figure 12)

PS/2 Mouse
(Top)
PS/2 Keyboard
(Bottom)

USB 1
(Top)
USB 0
(Bottom)

Parallel Port
(Top)

Com1
(Bottom Left)

Com2
(Bottom Right)
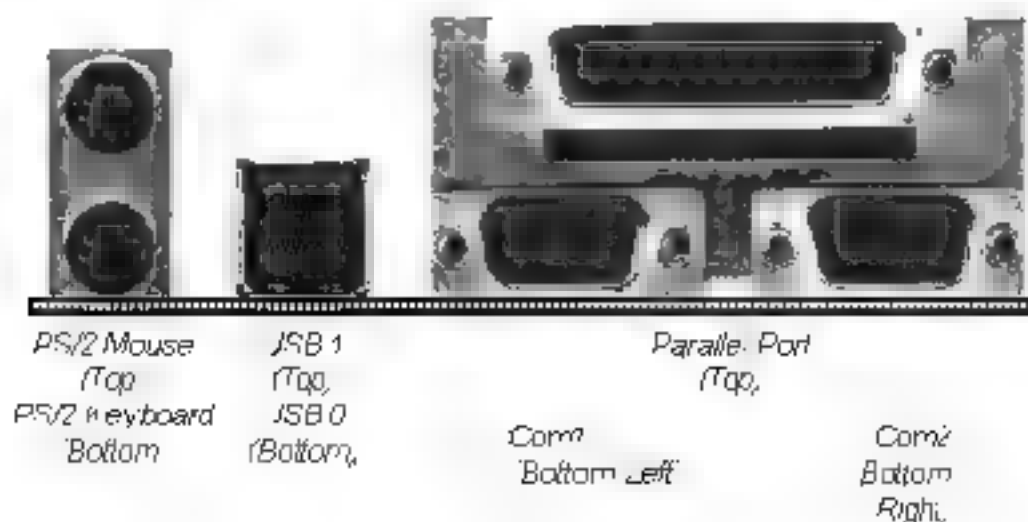
Figure 12

J7 CPU Fan Power
- A plug in for the CPU Fan Power

J8 Power Supply Fan Monitoring
- A plug in for the Power supply so that BIOS can monitor the RPM's

J9 ATX Power Connector
- 20-pin power connector

J10 Chassis Panel Connector
- Keylock, Speaker, Reset, Turbo, Sleep, G/LED and HDD LED

J11 Primary IDE

J12 Secondary IDE

J13 Floppy Controller

J14 Chassis Fan Power
- A plug in for the chassis Fan Power

J15 Chassis open monitoring
- A plug in to monitor the chassis

Back to Top

S e c t i o n   3 - 4
Device Connectors (continued)

JP7 [· ·] **Power On/Off** This is connected to the power button on the case. Using the Soft-Off by Pwr-BTTN feature, you can choose either Instant Off (turns system off immediately), or 4 sec delay (you need to hold the button down for 4 seconds before the system turns off). When the system is in 4 sec delay mode, EPoX has added a special feature to make the system go into suspend mode when the button is pressed momentarily.

JP9

+[·] **IDE LED indicator** LED ON when Onboard PCI IDE Hard disks is
 [·] activate

+[·] **Power Saving LED indicator** LED ON when system is in any power
 [·] saving mode

 [·] **Sleep/Resume switch** Closed to enter sleep mode, a keystroke or
 [·] mouse movement will instantly "wake up" the system

+[·] **Turbo LED indicator** LED ON when higher speed is selected
 [·]

+[·] **Reset** Closed to restart system
 [·]

 [·] **Speaker** Connect to the system's speaker for beeping
 [·]   1 Speaker   3 GND
 [·]   2 N/C   4 GND
1[·]

 [·] **KeyLock** Keyboard lock switch & Power LED connector
 [·]   1 Power LED + 4 Keylock
 [·]   2 N/C   5 GND
 [·]   3 GND
1[·]

Section 4
AWARD BIOS SETUP

BIOS Instructions

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

To enter the Setup Program

Power on the computer and press the <Del> key immediately, this will bring you into the BIOS CMOS SETUP UTILITY.

```
             ROM PCI / ISA BIOS (2A69KPA9)
                 CMOS SETUP UTILITY
                 AWARD SOFTWARE, INC

  ┌─────────────────────────────┬─────────────────────────────┐
  │  STANDARD CMOS SETUP         │  SUPERVISOR PASSWORD         │
  │                              │                             │
  │  BIOS FEATURES SETUP         │  USER PASSWORD              │
  │                              │                             │
  │  CHIPSET FEATURES SETUP      │  IDE HDD AUTO DETECTION     │
  │                              │                             │
  │  POWER MANAGEMENT SETUP      │  HDD LOW LEVEL FORMAT       │
  │                              │                             │
  │  PNP/PCI CONFIGURATION       │  SAVE & EXIT SETUP          │
  │                              │                             │
  │  INTEGRATED PERIPHERALS      │  EXIT WITHOUT SAVING        │
  │                              │                             │
  │  LOAD SETUP DEFAULTS         │                             │
  ├─────────────────────────────┴─────────────────────────────┤
  │  ESC  QUIT              ↑ ↓ → ←   SELECT ITEM              │
  │  F10  Save & Exit Setup   (Shift)F2  Change Color          │
  ├────────────────────────────────────────────────────────────┤
  │            Time, Date, Hard Disk Type                      │
  └────────────────────────────────────────────────────────────┘
```

Figure   CMOS Setup Utility

The menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction key) to the item and pressing the "Enter" key. An online help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose "Standard CMOS Setup" in the CMOS SETUP UTILITY Menu (Figure 2). The Standard CMOS Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type, and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (use direction keys to move the cursor and the <Enter> key to select), the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

```
                    ROM PC/ISA BIOS(2A69KPA9)
                       STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC

 Date (mm:dd:yy)    Wed, Apr 17 1996
 Time (hh:mm:ss)    14  30  30

 HARD DISKS       TYPE   SIZE   CYLS   HEAD   PRECOMP   LANDZONE   SECTORS   MODE
 Primary Master   Auto    0      0      0        0         0         0       Auto
 Primary Slave    Auto    0      0      0        0         0         0       Auto
 Secondary Master Auto    0      0      0        0         0         0       Auto
 Secondary Slave  Auto    0      0      0        0         0         0       Auto

 Drive A    1.44M,3.5 in
 Drive B    None
 Floppy 3 Mode Support   Disabled       Base Memory       640K
 Video      EGA/VGA                     Extended Memory   31744K
 Halt On    All Errors                  Other Memory      384K

                                        Total Memory      32768K

 ESC   Quit               ↑↓→    Select Item      PU/PD/+/-   Modify
 F1    Help           (Shift)F2  Change Color
```

Figure 2   Standard CMOS Setup

NOTE: If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, then the hard disk size and model will be auto-detected.

Back to Top

NOTE: The "Halt On" field is used to determine when to halt the system by the BIOS if an error occurs.

NOTE: Floppy 3 Mode support is a mode used to support a special 3.5" drive used in Japan. This is a 3.5" disk that stores only 1.2 MB, the default setting for this is disabled.

4-2 BIOS Features Setup

Selecting the "BIOS FEATURES SETUP" option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values for the EP-61BXA-M.

Pressing the [F1] key will display a help message for the selected item.

```
                   ROM PCI/ISA BIOS(2A69KPA9)
                       BIOS FEATURES SETUP
                      AWARD SOFTWARE INC.

 ┌─────────────────────────────────┬─────────────────────────────────────┐
 │ Virus Warning          Disabled │ Video BIOS    Shadow        Enabled  │
 │ CPU Internal Cache     Enabled  │ D8000-CBFFF   Shadow        Disabled │
 │ External Cache         Enabled  │ CC000-CFFFF   Shadow        Disabled │
 │ Quick Power On Self Test Enabled│ D0000-D3FFF   Shadow        Disabled │
 │ Boot Sequence          A C SCSI │ D4000-D7FFF   Shadow        Disabled │
 │ Swap Floppy Drive      Disabled │ D8000-DBFFF   Shadow        Disabled │
 │ Boot Up Floppy Seek    Enabled  │ DC000-DFFFF   Shadow        Disabled │
 │ Boot Up Numlock Status On       │                                      │
 │ Boot UP System Speed   High     │                                      │
 │ Gate A20 option        Fast     │                                      │
 │ Typematic Rate Setting Disabled │                                      │
 │ Typematic Rate (Chars/Sec) 6    │                                      │
 │ Typematic Delay (Msec) 250      │                                      │
 │ Security Option        Setup    ├──────────────────────────────────────│
 │ PCI/VGA Palette Snoop  Disabled │ Esc  Quit          ↑↓→    Select Item │
 │ Assign IRQ For VGA     Enabled  │ F1   Help       PU/PD/+   Modify      │
 │ OS Select For DRAM >64MB Non OS2│ F5   Old Values (Shift)F2 Color       │
 │ Report NO FDD For Win 95  NO    │ F7   Load Setup Defaults              │
 └─────────────────────────────────┴─────────────────────────────────────┘
```

Figure 3 BIOS Features Setup

Virus Warning: During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear.

You should then run an anti-virus program to locate the virus. Keep in mind that this feature protects only the boot sector, not the entire hard drive.
The default value is Disabled.

Enabled: Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector.

Disabled: No warning message will appear when anything attempts to access the boot sector.

Note: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program we recommend that you first disable the virus warning.

CPU Internal Cache This controls the status of the processor's internal cache area.
The default is Enabled

Enabled: This activates the processor's internal cache thereby increasing performance.
Disabled: This deactivates the processor's internal cache thereby lowering performance.

External (L2) Cache This controls the status of the external L2 cache area
The default is Enabled

Enabled This activates the motherboard's L2 cache thereby increasing performance
Disabled: This deactivates the motherboard's L2 cache thereby lowering performance

Quick Power On Self Test This category speeds up the Power On Self Test (POST)
The default is Enabled

Enabled: This setting will shorten or skip of the items checked during POST
Disabled. Normal POST

Boot Sequence This category determines which drive is searched first by the O/S Operating System
The default is A,C,SCSI

The following is your list of options
[A, C, SCSI] [C, A, SCSI] [C, CD-ROM, A] [CD-ROM, C, A]
[D, A,CD-ROM],[E, A, CD-ROM] [F, A, CD-ROM] [SCSI, A, C]
[SCSI,C, A] [C Only]

Back to Top

Swap Floppy Drive This will swap your physical drive letters A & B if you are using two floppy disks
The default is Disabled

> *Enabled:* *Floppy A & B will be swapped under the O/S.*
> *Disabled.* *Floppy A & B will be not swapped.*

Boot Up Floppy Seek During Power On Self Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks Only 360K type is 40 tracks while 760K, 1 2MB and 1.44MB are all 80 tracks
The default is Enabled

> *Enabled.* *The BIOS will search the floppy disk drive to determine if it is 40 or 80 tracks.*
> *Disabled.* *The BIOS will not search for the type of floppy disk drive by track number.*

> *NOTE   BIOS can not tell the difference between 720K, 1 2MB and 1 44MB drive types as they are all 80 tracks.*

Boot Up NumLock Status This controls the state of the NumLock key when the system boots
The default is On

> *On*   *The keypad acts as a 10-key pad*
> *Off* *The keypad acts like the cursor keys*

Boot UP System Speed   This controls the initial system speed of the computer
The default is High

> *High*   *This setting sets the computer into normal operation mode.*
> *Low*. *This setting sets the computer into a slower operating mode. Some add in peripherals or old software may require this setting   Using CTRL+ALT+ +, will switch you back into high speed mode*

Gate A20 Option This refers to the way the system addresses memory above 1MB extended memory
The default is Fast

> *Normal.* *The A20 signal is controlled by the keyboard controller or chipset hardware.*
> *Fast*   *The A20 signal is controlled by Port 92 or chipset specific method*

Back to Top

Typematic Rate Setting This determines the keystrokes repeat rate
The default is Disabled

> *Enabled* Allows typematic rate and typematic delay programming
> *Disabled* The typematic rate and typematic delay will be controlled by the keyboard controller in your system

Typematic Rate (Chars/Sec) This is the number of characters that will be repeated by a keyboard press
The default is 6

> *6.* 6 characters per second   *8.* 8 characters per second
> *10:* 10 characters per second   *12:* 12 characters per second
> *15:* 15 characters per second.   *20:* 20 characters per second.
> *24* 24 characters per second.   *30.* 30 characters per second.

Typematic Delay (msec) This setting controls the time between the first and the second character displayed by typematic auto repeat
The default is 250

> *250* 250 msec.
> *500* 500 msec.
> *750* 750 msec.
> *1000.* 1000 msec.

Security Option This category allows you to limit access to the System and Setup, or just to Setup
The default is Setup

> *System.* The system will not boot and the access to Setup will be denied if the correct password is not entered at the prompt,
> *Setup.* The system will boot, but the access to Setup will be denied if the incorrect password is not entered at the prompt.

PCI/VGA Palette Snoop This field controls the ability of a primary PCI VGA controller to share a common palette (When a snoop write cycles) with an ISA video card
The default is Disabled

> *Enabled.* If an ISA card is connected to a PCI VGA card via the VESA connector and that ISA card connects to a VGA monitor then that ISA card uses the RAMDAC of the PCI card.
> *Disabled.* Disables the VGA card Palette Snoop function.

OS Select For DRAM > 64MB   Some operating systems require special handling
Use this option only if your system has greater than 64MB of memory
The default is Non-OS2

> **OS2**   Select this if you are running the OS/2 operating system with greater
> than 64MB of RAM
> **Non-OS2**   Select this for all other operating systems and configurations

Video BIOS Shadow   This option allows video BIOS to be copied into RAM
Video Shadowing will increase the video performance of your system.
The default is Enabled

> **Enabled**   Video shadow is enabled
> **Disabled**   Video shadow is disabled

C8000 CBFFF Shadow
CC000 CFFFF Shadow
D0000 D3FFF Shadow
D4000 D7FFF Shadow
D8000 DBFFF Shadow
DC000 DFFFF Shadow

These categories determine whether ROMs from option cards will be copied into
RAM This will be in 16K byte or 32K byte units and the size will depend on chipset
of the option card

> **Enabled.**   Optional shadow is enabled.
> **Disabled.**   Optional shadow is disabled.

4-3 Chipset Features Setup

Choose the "CHIPSET FEATURES SETUP" in the CMOS SETUP UTILITY menu to display following menu.

```
ROM PCI/ISA BIOS (2A59IPAB)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC
```

Auto Configuration	Enabled	SDRAM RAS Latency Time	2
EDO DRAM Timing	60ns	Spread Spectrum Modulated	Disabled
RX Write Stacle	1 Fast	CPU Warning Temperature	60C/140F
FDO RASl To CASH Delay	2	Current cpu Temperature	51C/87F
FDO RASl Precharge Time	3	Current System Temp	51C/87F
FDO DRAM Read Burst	x222	Current PWR SUP FAN Speed	0 RPM
EDO DRAM Write Burst	x222	Current CPU FAN Speed	4578 RPM
DRAM Data Integrity Mode	Non-ECC	Current Chassis FAN Speed	0 RPM
CPU Dsdy's Write Posting	Enabled	CPU(V) 3.80 V	+1.5V	+8 0
System BIOS Cacheable	Disabled	+3.3V 3.36 V	+5V	+5 0
Video BIOS Cacheable	Disabled	+ 2V 2.28 V 2V	11.90 V	
Video RAM Cacheable	Disabled	5V 5.30 V		
8 Bit I/O Recovery Time	3			
16 Bit I/O Recovery Time	2			
Memory Hole At 15M-16M	Disabled			
Passive Release	Enabled			
Delayed Transaction	Enabled			
AGP Aperture Size (MB)	0			
SDRAM RAS-to-CAS Delay 2 Fast		Esc Quit	↑↓→	Select Item
SDRAM RAS Precharge Time 2 Fast		F1 Help	PU/PD/+/-	Modify
		F5 Old Values	Shift F2	Color
		F7 Load Setup Defaults		

Figure 4   Chipset Features Setup

Auto Configuration This selects predetermined optimal values of the chipset parameters

The default is Enabled

> **Enabled**   This enables auto-configuration and provides the option to select predefined timing modes
>
> **Disabled**   This allows the user to specify DRAM timing parameters.
>
> **Note**.   If you exceed the performance characteristics of memory in your system it will result in lockups, crashes and other problematic system operations.

EDO DRAM Speed Selection   This value must correspond to the speed of the DRAM installed in your system
The default is 60ns

50ns *(Faster) Burst Wait State for 50ns EDO DRAM*
60ns *(Slower) Burst Wait State for 60ns Fast Page Mode/EDO DRAM*

MA Additional Wait State This allows the option to insert an additional wait state before the beginning of a memory read. Use of this option may be required to achieve compatibility with some system configurations.
The default is Slow.

Fast *Inserts no wait state*
Slow *Inserts one wait state for the memory cycle*

EDO RAS# to CAS# Delay Allows you to insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed.
The default is 3.

2 *Faster performance*
3 *Better reliability.*

EDO RAS# Precharge Time The precharge time is the number of cycles it takes for the RAS to accumulate its charge before EDO DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the EDO DRAM may fail to retain data.
The default is 4.

3 *Time equals 3 host clocks*
4 *Time equals 4 host clocks*

EDO DRAM Read Burst (B/E/F) This setting will allow you to set the timing for burst mode reads from EDO DRAM. The lower the timing number the faster the system addresses the memory.
The default is x333.

x222 *Use of this option may cause conflicts with some system configurations.*
x333 *This is used for standard system configurations.*

EDO DRAM Write Burst (B/E/F) This setting will allow you to set the timing for burst mode writes to EDO DRAM. The lower the timing number the faster the system addresses the memory.
The default is x333.

x222: *Use of this option may cause conflicts with some system configurations*

x333: *This is used for standard system configurations*

DRAM Data Integrity Mode   Use this option to configure the type of DRAM in your system

The default is Non-ECC

   Non-ECC: *If your memory is Non-ECC memory, choose this option.*

   ECC: *If your memory is ECC memory, choose this option*

CPU To PCI IDE Posting   This option allows the computer to post write cycles from the CPU to the PCI IDE interface. IDE accesses are posted in the CPU to PCI buffers, for cycle optimization

The default is Enabled

   Enabled   *Enabled*

   Disabled   *Disabled*

System BIOS Cacheable   This allows you to copy your BIOS code from slow ROM to fast RAM

The default is Disabled

   Enabled. *The option will improve system performance. However, if any program writes to this memory area, a system error may result.*

   Disabled. System BIOS non-cacheable.

Video BIOS Cacheable   This option copies the video ROM BIOS to fast RAM C0000h to C7FFFh

The default is Enabled

   Enabled. Enables the Video BIOS Cacheable to speed up the VGA Performance.

   Disabled. Will not use the Video BIOS Cacheable function.

Video RAM Cacheable   This option allows the CPU to cache read/writes of the video RAM

The default is Enabled

   Enabled   *This option allows for faster video access*

   Disabled. Reduced video performance.

Back to Top

8 Bit I/O Recovery Time   This function allows you to set the wait state that is added to an 8 bit ISA instruction originated by the PCI bus
The default is 1

NA.	*No wait state*	*8*	*8 wait states*
1	*1 wait states*	*2*	*2 wait states*
3	*3 wait states*	*4*	*4 wait states*
5.	*5 wait states*	*6*	*6 wait states*
7.	*7 wait states*		

16 Bit I O Recovery Time   This function allows you to set the wait state that is added to an 16 bit ISA instruction originated by the PCI bus
The default is 2

NA.	*No wait state*	*4*	*4 wait states*
3	*3 wait states*	*2*	*2 wait states*
1	*1 wait states*		

Memory Hole at 15M-16M   You can reserve this memory area for the use of ISA adaptor ROMs
The default is Disabled

> *Enabled.*   *This field enables the main memory (15~16MB) to remap to ISA BUS*
> *Disabled.*   *Normal Setting*

> *NOTE   If this feature is enabled you will not be able to cache this memory segment.*

Passive Release   This option allows access from the CPU to PCI bus to be active during passive release   Otherwise, the arbiter only accepts another PCI master access to local DRAM
The default is Enabled

> *Enabled.*   *Enabled*
> *Disabled.*   *Disabled*

Delayed Transaction   This option allows the chipset to use its embedded 32-bit posted write buffer to support delay transactions cycles
The default is Disabled

> *Enabled   Select enabled to support PCI 2.1 specification*
> *Disabled.*   *Disabled.*

AGP Aperture Size   The amount of system memory that the AGP card is allowed to share
The default is 4

>   **4**   4MB of systems memory accessable by the AGP card.
>   **8**   8MB of systems memory accessable by the AGP card.
>   **16**   16MB of systems memory accessable by the AGP card.
>   **32**   32MB of systems memory accessable by the AGP card
>   **64**   64MB of systems memory accessable by the AGP card.
>   **128** 128MB of systems memory accessable by the AGP card.
>   **256** 256MB of systems memory accessable by the AGP card.

SDRAM RAS# to CAS# Delay   Allows you to insert a timing delay between the CAS and RAS strobe signals used when SDRAM is written to, read from, or refreshed
The default is Fast

>   **Fast.** Provides faster memory performance
>   **Slow**: Provides better memory compatibility

SDRAM Precharge Time   The precharge time is the number of cycles it takes for the RAS to accumulate its charge before SDRAM refresh. If insufficient time is allowed refresh may be incomplete and the SDRAM may fail to retain data
The default is Fast

>   **Fast.** Provides faster memory performance.
>   **Slow**: Provides better memory compatibility.

SDRAM CAS Latency Time   This setting defines the CAL timing parameter of the SDRAM in terms of clocks
The default is 3

>   **2**   Provides faster memory performance
>   **3**   Provides better memory compatibility.

CPU Warning Temperature   This is the temperature that the computer will respond to an overheating CPU
The default is disabled

>   **Enabled.**   Temperature is monitored on the CPU
>   **Disabled.** This feature is turned off

Back to Top

Current CPU Temperature This s the current temperature of the CPU

Current Power FAN Speed The current power fan speed n RPMs

Current CPU FAN Speed The current CPU fan speed in RPMs

Current Chass.s FAN Speed The current chass s fan speed n RPMs

CPU(V) The vo tage eve of the CPU

4-4 Power Management Setup

Choose the "POWER MANAGEMENT SETUP" in the CMOS SETUP UTILITY
to display the following screen This menu allows the user to modify the power
management parameters and IRQ s gna s In genera, these parameters should not be
changed unless t s absolute y nec essary

ROM PCI/ISA BIOS 2A59IPAB,
POWER MANAGEMENT SETUP
AWARDSOFTWARE, NC

Power Management	User Define	*** Reload Global Timer Events ***	
Pla Control by APM	Yes	IRQ [3-7,9-15], NMI	Enabled
Video off Method	V/H SYNC+Blank	Primary IDE 0	Disabled
Video off After	Standby	Primary IDE	Disabled
Modem Use IRQ	3	Secondary IDE 0	Disabled
Doze Mode	Disabled	Secondary IDE 1	Disabled
Standby Mode	Disabled	Floppy Disk	Disabled
Suspend Mode	Disabled	Serial Port	Enabled
HDD Power Down	Disabled	Parallel Port	Disabled
Throttle Duty Cycle	62.5%		
VGA Active Monitor	Enabled		
Soft-off by PWR-BTTN	Delay 4 Sec		
Resume by Alarm	Enabled		
Power Loss Recovery	Enabled	Esc Quit	↑↓→ Selat Item
Resume By Alarm	Enabled	F1 Help	PU/PD+/- Modify
Date (of Month) Alarm	0	F5 Old Values	(Shift) F2 Color
Time (hh mm ss) Alarm	0 0 0	F7 Load Setup Defaults	
IRQ 8 Clock Event	Disabled		

Figure 1 Power Management Setup

You can only change the content of Doze Mode, Standby Mode, and Suspend Mode
when the Power Management s set to User Define

Power Management Use this to select your Power Management selection.
The default is User define

> **Disabled**. The system operates in NORMAL conditions (Non-GREEN), and the Power Management function is disabled
>
> **Max. saving**. Maximum power savings. Inactivity period is 1 minute in each mode
>
> **Min. saving** Minimum power savings. Inactivity period is 1 hour in each mode
>
> **User define** Allows user to define PM Timers parameters to control power saving mode

PM controlled APM This option shows weather or not you want the Power Management to be controlled the Advanced Power Management (APM)
The default is Yes

> **Yes** APM controls your PM
>
> **No.** APM does not control your PM

Video Off Method This option allows you to select how the video will be disabled by the power management
The default is V/H Sync + Blank

> **V/H Sync + Blank**. System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer
>
> **DPMS**: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values
>
> **Blank Screen**: System only writes blanks to the video buffer

Video Off After Tells you what time frame that the video will be disabled under current power management settings
The default is Standby

> **Standby**. Video powers off after time shown in standby mode setting
>
> **Doze**: Video powers off after time shown in doze mode setting
>
> **Suspend** Video powers off after time shown in suspend mode setting
>
> **N/A** Video power off not controlled by power management

MODEM Use IRQ Name the interrupt request (IRQ) line assigned to the modem if any, on your system. Activity of the selected IRQ always awakens the system. Default is IRQ 3.

    N/A: No IRQ is used   3 IRQ 3
    4 IRQ 4   5 IRQ 5
    7: IRQ 7   9 IRQ 9
    10 IRQ 10   11: IRQ 11

The KP6-LA supports HDD Power Down, Doze and Standby power saving functions when using the Intel Pentium II Processor.
The default is Disabled.

Doze Mode: The "Doze" mode timer starts to count when no "PM events" have occurred.

Standby Mode When the standby mode timer times out it will enter the standby mode and retain CPU at a slow working speed. The screen will be blanked out.

Suspend Mode This function works only when the Pentium II Processor is installed. The timer starts to count when "System Standby" mode timer is timed out and no "PM Events" are occurring. Valid range is from 1 minute up to 1 hour.

HDD Power Down HDD Standby timer can be set from 1 to 15 minutes.

VGA Active Monitor Use this option if your monitor has advanced power saving features.
The default is Enabled.

    Enabled Your monitor's power features will be included in power management.
    Disabled Your monitor's power features will not be included in power management.

Soft Off by PWR-BTTN Use this to select your soft off function.
The default is Instant Off.

    Instant Off Turns off instantly.
    4 Second Delay Turns off after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. Press again to take system out of Suspend Mode.

Back to Top

Resume by Ring This option is used to set the remote ring in feature. This option is only available when Power Loss Recovery is Enabled.
The default is Enabled.

    Enabled   The system can use remote ring in to wake the system up.
    Disabled   The system cannot use remote ring in to wake system up.

Power Loss Recovery If the power to the system is cut off the system will turn itself back on with no user intervention.
The default is Enabled.

    Enabled.   The system will power back on after a power interuption.
    Disabled   The system will stay off after a power interruption.

Resume by Alarm This option allows you to have the system turn on at a preset time each day or on a certain day. This option is only available when Power Loss Recovery is Enabled.
The default is Enabled.

    Enabled.   The system will turn on at the preset time.
    Disabled.   The system will not turn on until you turn it on.

Date (of month) Alarm: This is how you set the date that the system will turn on.
The default is 0.

    0   Setting this to 0 will turn the system on everyday at the preset time.
    1-31   Represents the day of the month that you need the system to turn on.

Time (hh:mm:ss) Alarm: This sets the time that you need the system to turn on.
The default is 08:00:00.

**Reload Global Timer Events **

These options allow the user to reset the global power features timer if any of the enabled events occur.

IRQ [3-7, 9-15], NMI   The default is Enable.
Primary IDE 0   The default is Disable.
Primary IDE 1   The default is Disable.
Secondary IDE 0   The default is Disable.
Secondary IDE 1   The default is Disable.
Floppy Disk   The default is Disable.
Serial Port   The default is Enable.
Parallel Port   The default is Disable.

4-5 PNP/PCI Configuration

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots

WARNING. Conflicting IRQ's may cause the system to not find certain devices.

Figure 6 PCI Configuration Setup

PNP OS Installed Do you have a PNP OS installed on your system. The default is No

    Yes   Select if you are using a PNP OS
    No   Select if your OS does not support PNP

Resources Controlled By Who controlled the system PNP/PCI resources
The default is Manual.

    Manual. PNP Card's resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI ISA PNP or Legacy ISA Cards

    Auto. If your ISA card and PCI card are all PNP cards BIOS will assign the interrupt resource automatically

Back to Top

Reset Configuration Data This setting allows you to clear ESCD data The default is Disabled

Disabled Normal Setting

Enabled. If you have plugged in some Legacy cards to the system and they were recorded into ESCD (Extended System Configuration Data), you can set this field to Enabled in order to clear ESCD.

PCI IDE IRQ Map To This item allows the user to configure the system for the type of IDE hard disk controller in use. By default, the BIOS assumes that the hard drive controller is an ISA device rather than a PCI controller. If you are using a PCI controller, then you will need to change this to specify which PCI slot has the controller and which PCI interrupt (A, B, C, or D) is associated with the connected IDE devices

The default value is PCI AUTO. This will allow the system to automatically configure the IDE devices
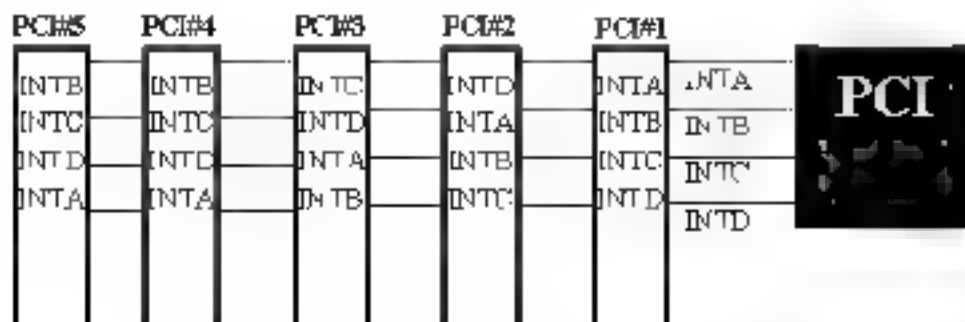
Figure 7: The Combination of PCI INT# lines

Used MEM base addr The Used MEM base addr (CB00, CC00, D000, D400, D800, DC00) and Used MEM Length (8K, 16K, 32K, 64K) are used to support some specific ISA Legacy cards with requested memory space below 1M address Now with these two functions users can define where the used memory address is located and its length of the legacy area that is used by the legacy device to avoid the memory space conflict. For example if you select "D000" for Used MEM base addr" and "16K" for "Used MEM Length", that means the address region D000H-D3FFFH is occupied by ISA legacy cards, and thus BIOS will not assign this region for PnP/ISA and PCI cards

The default is N/A

Back to Top

4-6 Load Setup Defaults

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

4-7 Integrated Peripherals

```
                    ROM PCI/ISA BIOS(2A69KPA9)
                     INTEGRATED PERIPHERALS
                      AWARD SOFTWARE, INC.

 IDE HDD Block Mode        Enabled     Onboard Parallel Port      378/IRQ7
 IDE Primary Master PIO    Auto        Onboard Parallel Mode      ECP+EPP
 IDE Primary Slave PIO     Auto        ECP Mode Use DMA           3
 IDE Secondary Master PIO  Auto        Parallel Port EPP Type     EPP1.9
 IDE Secondary Slave PIO   Auto
 IDE Primary Master UDMA   Auto
 IDE Primary Slave UDMA    Auto
 IDE Secondary Master UDMA Auto
 IDE Secondary Slave UDMA  Auto
 Onboard Primary PCI IDE   Enabled
 Onboard Secondary PCI IDE Enabled
 USB Keyboard Support      Disabled

 KBC Input Clock           12MHz
 Onboard FDD Controller    Enabled
 Onboard Serial Port       Auto     Esc  Quit          ↑↓→   Select Item
 Onboard Serial Port 2     Auto     F1   Help          PU/PD/+/- Modify
 Onboard IR Controller     Disabled F5   Old Values    Shift)F2  Color
                                    F7   Load Setup Defaults
```

Figure 8   Integrated Peripherals

Note   *If you do not use the Onboard IDE connector, then you will need to set Onboard Primary PCI IDE: Disabled and Onboard Secondary PCI IDE: Disabled*

Note   *The Onboard PCI IDE cable should be equal to or less than 18 inches (45 cm).*

IDE HDD Block Mode   IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time
The default is Enabled

> *Enabled.*   *Enabled IDE HDD Block Mode. Provides higher HDD transfer rates*
> *Disabled.*   *Disable IDE HDD Block Mode*

Onboard Primary PCI IDE   The default value is Enabled

> *Enabled. Enables Onboard IDE primary port*
> *Disabled. Disables Onboard IDE primary port*

Onboard Secondary PCI IDE
The default is Enabled

> *Enabled. Enables Onboard IDE secondary port.*
> *Disabled. Disables Onboard IDE secondary port*

IDE Primary Master PIO
The default is Auto

> *Auto. BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode*
> *Mode 0~4 Manually set the IDE Programmed interrupt mode*

IDE Primary Slave PIO
The default is Auto

> *Auto. BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode*
> *Mode 0~4 Manually set the IDE Programmed interrupt mode*

IDE Secondary Master PIO
The default is Auto

> *Auto. BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode*
> *Mode 0~4 Manually set the IDE Programmed interrupt mode*

IDE Secondary Slave PIO
The default is Auto

> *Auto. BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode*

Mode 0~4   Manually set the IDE Programmed interrupt mode

IDE Primary Master UDMA This allows you to select the mode of operation for the hard drive
The default is Auto

> *Auto   The computer will select the optimal setting*
> *Disabled   The hard drive will run in normal mode*

IDE Primary Slave UDMA This allows you to select the mode of operation for the hard drive
The default is Auto

> *Auto. The computer will select the optimal setting*
> *Disabled.   The hard drive will run in normal mode*

IDE Secondary Master UDMA This allows you to select the mode of operation for the hard drive
The default is Auto

> *Auto. The computer will select the optimal setting*
> *Disabled.   The hard drive will run in normal mode*

IDE Secondary Slave UDMA This allows you to select the mode of operation for the hard drive
The default is Auto

> *Auto. The computer will select the optimal setting*
> *Disabled.   The hard drive will run in normal mode*

USB Keyboard Support This controls the activation status of an optional USB keyboard that may be attached
The default is disabled

> *Enabled· Enable USB keyboard support*
> *Disabled   Disable USB keyboard support.*

OnBoard Primary PCI IDE This option turns on and off the onboard primary IDE.
The default is enabled

> *Enabled. This activates the primary PCI IDE.*
> *Disabled This disables the primary PCI IDE and frees up the resource*

OnBoard Secondary PCI IDE This option turns on off the onboard secondary IDE
The default is enabled

> *Enabled. This activates the secondary PCI IDE*
> *Disabled. This disables the secondary PCI IDE and frees up its resources*

KBC input clock This sets the keyboard clock value
The default is 12 MHz

> *Options 6 8, 12, 16 are the available choices*

Onboard FDC Controller This controls the state of the onboard floppy controller
The default value is Enabled.

> *Enabled Enable the Onboard Winbond Chips floppy drive interface*
> *controller*
> *Disabled Disable the Onboard Winbond Chip floppy drive interface*
> *controller*

Onboard Serial Port 1 This field allows the user to configure the 1st serial port
The default is Auto

> *AUTO Enable Onboard Serial port 1 and address is Auto adjusted*
> *COM1 Enable Onboard Serial port 1 and address is 3F8H IRQ4*
> *COM2 Enable Onboard Serial port 1 and address is 2F8H IRQ3*
> *COM3 Enable Onboard Serial port 1 and address is 3E8H IRQ4*
> *COM4 Enable Onboard Serial port 1 and address is 2E8H IRQ3*
> *Disabled. Disable Onboard SMC CHIP s Serial port 1*

Onboard Serial Port 2 This field allows the user to configure the 2nd serial port
The default is Auto

> *AUTO Enable Onboard Serial port 2 and address is Auto adjusted*
> *COM1 Enable Onboard Serial port 2 and address is 3F8H IRQ4*
> *COM2 Enable Onboard Serial port 2 and address is 2F8H IRQ3*
> *COM3 Enable Onboard Serial port 2 and address is 3E8H IRQ4*
> *COM4 Enable Onboard Serial port 2 and address is 2E8H IRQ3*
> *Disabled, Disable Onboard SMC CHIP s Serial port 2*

Back to Top

Onboard IR Controller IrDA Controller
The default is Enabled

IR Address Select The port location of the IR controller
The default is 2E8H

IR Mode The mode of the IR controller
The default is IrDA

IR Transaction Delay
The default is Enabled

IR IRQ Select
The default is IRQ 10

IR Mode use DMA
The default is Disable

Onboard Parallel port This field allows the user to configure the LPT port
The default is 378H IRQ7

>   *378H Enable Onboard LPT port and address is 378H and IRQ7*
>   *278H Enable Onboard LPT port and address is 278H and IRQ5*
>   *3BCH Enable Onboard LPT port and address is 3BCH and IRQ7*
>   ***Disabled.** Disable Onboard Winbond Chip's LPT port.*

Parallel Port Mode This field allows the user to select the parallel port mode
The default is ECP+EPP

>   ***Normal** Standard mode IBM PC/AT Compatible bidirectional parallel port*
>   *EPP· Enhanced Parallel Port mode*
>   *ECP Extended Capabilities Port mode*
>   *EPP+ECP· ECP Mode & EPP Mode*

ECP Mode USE DMA This field allows the user to select DMA1 or DMA3 for
the ECP mode
The default is DMA3

>   ***DMA1** This field selects the routing of DMA1 for the ECP mode*
>   ***DMA3** This field selects the routing of DMA3 for the ECP mode*

4-8 Change Supervisor or User Password

To change the password, choose the "SUPERVISOR PASSWORD or USER PASSWORD" option from the CMOS SETUP UTILITY menu and press Enter.

NOTE: Either "Setup" or "System" must be selected in the "Security Option" of the BIOS FEATURES SETUP menu.

1   If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message:

    Enter Password

    Press the [Enter] key to continue after the proper password is given.

2   If the CMOS is corrupted or the option was used earlier and the user wishes to change the default password, the SETUP UTILITY will display a message and ask for a confirmation.

    Confirm Password

3   After pressing the Enter key (ROM password if the option was not used) or current password (user-defined password), the user can change the password and store new one in CMOS RAM. A maximum of 8 characters can be entered.

4-9 IDE HDD Auto Detection

The "IDE HDD auto detection" utility is a very useful tool, especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don't need the "IDE HDD AUTO DETECTION" utility. The BIOS will Auto-detect the hard disk size and mode on display during POST.

ROMPCI/ISA BIOS(2A69KPA9)
CMOSSETUP UTILITY
AWARDSOFTWARE,INC

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE

Primary Master

Select Secondary Slave Option(N=Skip) :N

OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
1(Y)	4310	524	145	0	14847	63	LBA
2	4310	14848	9	65535	14847	63	NORMAL
3	4310	928	144	65535	14847	63	LARGE

Note: Some OSes (like SCO-UNIX) must use NORMAL for installation

ESC :Skip

Figure 8   IDE HDD Auto Detection

NOTE HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE NORMAL mode

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing

The maximum number of cylinders, head & sectors for NORMAL mode are

1024,16 & 63

no Cylinder	(1024)
x no Head	16)
x no Sector	63
x no per sector	512
	528 Megabytes

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

Back to Top

LBA (Logical Block Addressing) mode A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 GigaBytes which is obtained by the following formula

no. Cylinder	(1024)
x no. Head	255
x no. Sector	63)
x bytes per sector	512.
	8.4 GigaBytes

LARGE mode Extended HDD access mode supported by Award Software

Some IDE HDDs contain more than 1024 cylinder without LBA support. In some cases user do not want LBA. The Award BIOS provides another alternative to support these kinds of LARGE mode

CYLS	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS or other OS' that the number of cylinders is ess than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside

INT 12h in order to access the right HDD address

Maximum HDD size

no. Cylinder	(1024
x no. Head	32
x no. Sector	63
x bytes per sector	512.
	1 GigaByte

Note To support LBA or LARGE mode of HDDs, there must be some software involved. All the software is located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h

UNIX operating systems do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB.

4-10 HDD Low Level Format

Interleave   Select the interleave number of the hard disk drive you wish to perform a low level formation. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for automatic detection.

Auto scan bad track   This allows the utility to scan first then format by each track.

Start   Press <Y> to start low level format.

3-11 Save & Exit Setup

The "SAVE & EXIT SETUP" option will bring you back to the boot up procedure with all the changes you just recorded in the CMOS RAM.

3-12 Exit Without Saving

The "EXIT WITHOUT SAVING" option will bring you back to normal boot up procedure without saving any data into CMOS RAM.

All old data in the CMOS will not be destroyed.

Back to Top

Section 5
DMI ACCESS

DMI Access

DMI, or desktop Management Interface, is a feature that is able to auto-detect and record information about your computer system. This information is used by computing professionals to accurately determine your system configuration and to diagnose and resolve problems.

The computer's BIOS will detect and record as much information as it is able to, and will store that information in a special location in the BIOS.

The DMI configuration utility will allow system integrators to add information that the BIOS cannot detect, such as model and brand of motherboard and other components. This information cannot be detected by the bios and must be added by the system integrator or vendor.

Back to top

A-1 MEMORY MAP

Address Range	Size	Description
[00000-7FFFF]	512K	Conventional memory
[80000-9FBFF]	127K	Extended Conventional memory
[9FC00-9FFFF]	1K	Extended BIOS data area if PS.2 mouse is installed
[A0000-C7FFF]	160K	Available for Hi DOS memory
[C8000-DFFFF]	96K	Available for Hi DOS memory and adapter ROMs
[E0000-EEFFF]	60K	Available for UMB
[EF000-EFFFF]	4K	Video service routine for Monochrome & CGA adaptor
[F0000-F7FFF]	32K	BIOS CMOS setup utility
[F8000-FCFFF]	20K	BIOS runtime service routine (2)
[FD000-FDFFF]	4K	Plug and Play ESCD data area
[FE000-FFFFF]	8K	BIOS runtime service routine 1

A-2 I/O MAP

[000-01F]	DMA controller Master
[020-02]	INTERRUPT CONTROLLER (Master)
[022-023]	CHIPSET control registers I/O ports
[040-05F]	TIMER control registers
[060-06F]	KEYBOARD interface controller (8042
[070-07F]	RTC ports & CMOS I/O ports
[080-09F]	DMA register
[0A0-0BF]	INTERRUPT controller (Slave
[0C0-0DF]	DMA controller Slave
[0F0-0FF]	MATH COPROCESSOR
[1F0- F8]	HARD DISK controller
[278-27F]	PARALLEL port 2
[2B0-2DF]	GRAPHICS adapter controller
[2F8-2FF]	SERIAL port 2
[360-36F]	NETWORK ports
[378-37F]	PARALLEL port 1
[3B0-3BF]	MONOCHROME & PARALLEL port adapter
[3C0-3CF]	EGA adapter

Back to Top

[3D0-3DF]   CGA adapter
[3F0-3F7]   FLOPPY DISK controller
[3F8-3FF]   SERIAL port

A-3   TIMER & DMA CHANNELS MAP

TIMER MAP
TIMER Channel 0   System timer interrupt
TIMER Channel 1   DRAM REFRESH request
TIMER Channel 2   SPEAKER tone generator
DMA CHANNELS
DMA Channel 0   Available
DMA Channel 1   Onboard ECP (Option)
DMA Channel 2   FLOPPY DISK (SMC CHIP)
DMA Channel 3   Onboard ECP (default)
DMA Channel 4   Cascade for DMA controller
DMA Channel 5   Available
DMA Channel 6   Available
DMA Channel 7   Available

A-4   INTERRUPT MAP

NMI
Parity check error
IRQ (H/W)
0   System TIMER interrupt from TIMER 0
1   KEYBOARD output buffer full
2   Cascade for IRQ 8-15
3   SERIAL port 2
4   SERIAL port
5   PARALLEL port 2
6   FLOPPY DISK (SMC CHIP)
7   PARALLEL port 1
8   RTC clock
9   Available
10   Available
11   Available
12   PS/2 Mouse
13   MATH coprocessor

Back to Top

4	Onboard HARD DISK (IDE channel
5	Onboard HARD DISK (IDE channel

A-5   RTC & CMOS RAM MAP

RTC & CMOS

00	Seconds
0	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
0	FLOPPY DISK drive type byte
	Reserve
2	HARD DISK type byte
3	Reserve
4	Equipment type
5	Base memory low byte
6	Base memory high byte
7	Extension memory low byte
8	Extension memory high byte
9 2d	
2E 2F	
30	Reserved for extension memory low byte
3	Reserved for extension memory high byte
32	DATE CENTURY byte
33	INFORMATION FLAG
34 3F	Reserve
40 7F	Reserved for CHIPSET SETTING DATA

Back to Top

Appendix B:

B-1 POST CODES

ISA POST codes are typically output to I/O port address 80h.

POST (hex)	DESCRIPTION
01-02	Reserved
C0	Turn off OEM specific cache, shadow
03	1. Initialize EISA registers (EISA BIOS only)
	2. Initialize all the standard devices with default values
	Standard devices includes:
	DMA controller (8237)
	Programmable Interrupt Controller (8259)
	Programmable Interval Timer (8254)
	RTC chip
04	Reserved
05	1. Keyboard Controller Self Test
06	2. Enable Keyboard Interface
07	Reserved
08	Verifies CMOS's basic R/W functionality
C1	Auto detection of onboard DRAM & Cache
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
08	Test the first 256K DRAM
09	OEM specific cache initialization (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers. Initialize INT numbers from 33-120 with Dummy (Spurious) Interrupt Handler
	2. Issue CPUID instruction to identify CPU type
	3. Early Power Management initialization (OEM specific)
0B	1. Verify the RTC time is valid or not
	2. Detect bad battery
	3. Read CMOS data into BIOS stack area
	4. PnP initializations including (PnP BIOS only)
	Assign CSN to PnP ISA card
	Create resource map from ESCD
	5. Assign I/O & Memory for PCI devices. (PCI BIOS only)

0C	Initialization of the BIOS Data Area (40:ON - 40:FF)
0D	1. Program some of the Chipset's value according to Setup (Early Setup Value Program)
	2. Measure CPU speed for display & decide the system clock speed
	3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep.
0E	1. Test video RAM. (If Monochrome display device found)
	2. Show messages including:
	- Award Logo, Copyright string, BIOS Data code & Part No.
	- OEM specific sign on messages.
	- Energy Star Logo. (Green BIOS ONLY)
	- CPU brand, type & speed.
	- Test system BIOS checksum. (Non-Compress Version only)
0F	DMA channel 0 test.
10	DMA channel 1 test.
11	DMA page registers test.
12-13	Reserved.
14	Test 8254 Timer 0 Counter 2
15	Test 8259 interrupt mask bits for channel 1.
16	Test 8259 interrupt mask bits for channel 2.
17	Reserved.
19	Test 8259 functionality.
1A-1D	Reserved.
1E	If EISA NVM checksum is good, execute EISA initialization (EISA BIOS only)
1F-29	Reserved.
30	Detect Base Memory & Extended Memory Size
31	1. Test Base Memory from 256K to 640K
	2. Test Extended Memory from 1M to the top of memory
32	1. Display the Award Plug & Play BIOS Extension message. (PnP BIOS only)
	2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port ... according to setup value
33-3B	Reserved.
3C	Set flag to allow users to enter CMOS Setup Utility.
3D	1. Initialize Keyboard
	2. Install PS2 mouse

3E	Try to turn on Level 2 cache. **Note:** Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h
3F-40	Reserved.
BF	1. Program the rest of the Chipset's value according to Setup (Later Setup Value Program)
41	2. If auto-configuration is enabled, program the chipset with pre-defined Values
42	Initialize floppy disk drive controller.
43	Initialize Hard drive controller.
45	If it is a PnP BIOS, initialize serial & parallel ports.
44	Reserved.
45	Initialize math coprocessor.
46-4D	Reserved.
4E	If there is any error detected (such as video, kb...), show all error messages on the screen & wait for user to press <F1> key.
4F	1. If password is needed, ask for password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS.
51	Reserved.
52	1. Initialize all ISA ROMs. 2. Later PCI initializations. (PCI BIOS only) - assign IRQ to PCI devices. - initialize all PCI ROMs 3. PnP Initializations. (PnP BIOS only) - assign IO, Memory, IRQ & DMA to PnP ISA devices - initialize all PnP ISA ROMs. 4. Program shadows RAM according to Setup settings. 5. Program parity according to Setup setting. 6. Power Management Initialization. - Enable/Disable global PM. - APM interface initialization.
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports. 2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value.
60	Setup Virus Protection. (Boot Sector Protection) functionality according to Setup setting

Back to Top

61   1. Try to turn on Level 2 cache
            Note: If L2 cache is already turned on in POST 3D, this part will be
            skipped.
            2. Set the boot up speed according to Setup setting.
            3. Last chance for Chipset initialization.
            4. Last chance for Power Management initialization (Green BIOS
            only)
            5. Show the system configuration table

62   1. Setup daylight saving according to Setup value.
            2. Program the NUM Lock, typematic rate & typematic speed
            according to Setup setting

63   1. If there is any changes in the hardware configuration, update the
            ESCD information. (PnP BIOS only)
            2. Clear memory that have been used.
            3. Boot system via INT 19H.

FF   System Booting. This means that the BIOS already pass the control
            right to the operating system.

B-2   Unexpected Errors:

POST (hex)	DESCRIPTION
B0	If interrupt occurs in protected mode.
B1	Unclaimed NMI occurs 0

Appendix C

NOTE:
The **'LOAD SETUP DEFAULTS'** function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary when you accept this mainboard, or the system CMOS data is corrupted.

ROM PCI/ISA BIOS(2A69KPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PNP/PCI CONFIGURA	Load SETUP Default (Y/N)? Y	ETUP
INTEGRATED PERIPH		SAVING
LOAD SETUP DEFAULTS	

ESC QUIT	↑ ↓ → SELECT ITEM
F10:Save & Exit Setup	(Shift)F2 :Change Color

Load Setup Defaults Except Standard COMS SETUP

LOAD SETUP DEFAULTS

Back to Top